

Tactical vs. Strategic

Traditionally, public sector asset management has been tactical in nature concentrating on immediate, existing conditions.

By thinking strategically, decisions are made with regard to the long-range condition of the entire system. This also requires considering various investment strategies which will maintain the assets in good condition.

The strategic component of the decision-making process entails the ability to assess improvements based on desired outcomes. The process utilizes performance measures and standards identified and established by the *Michigan Department of Transportation Business Plan*. Standards indicate the desired condition and service level of the different components of the transportation network. An outcome-based deficiency analysis is derived by examining the difference between existing conditions and established standards.

The process must include a strategic component that sets targets based on agreed-upon performance criteria and design standards. The strategic focus is evident in the creation of customer service-oriented performance measures. The performance measures also consider system maintenance at a level that ensures realizing the full value from the initial investment.

What Impacts Strategic Decisions?

The strategic focus of an asset management process is supported by network-level analysis in addition to the tactical focus of performing location-specific, project-level analysis. This is not to imply a “worst-first” deficiency analysis; rather an analysis of the conditions based on usage factors and long-term strategic goals

for the transportation system. This task would include consideration of:

- Current condition of the transportation system; future condition with no change in practices
- Future condition with alternative strategies
- The right time to maintain, preserve or improve to get maximum useful life from a transportation asset
- Use preventive fixes or allow an asset to deteriorate to the point of needing to reconstruct
- Costs and benefits of each decision
- Invest in maintenance equipment or contract with other entities for basic maintenance
- Relationship to identified goals and objectives.

The key is the conscious effort required to create and analyze alternatives. It is necessary to focus attention on effectively and efficiently managing and operating our transportation system, rather than merely reconstructing it.

MDOT Strategic Applications

MDOT, as part of its transportation asset management process, uses a variety of analytical tools. Our governmental agency partners use some of these, as well as others unique to their jurisdiction. A sample of MDOT strategic tools include:

- Road Quality Forecasting System (RQFS): An analytical tool that projects results of various pavement rehabilitation policies. Working from current pavement condition, age and type, and factoring in aging and fix strategies, RQFS estimates the future condition of the pavement network.



- **Prioritization Process:** MDOT has been using a prioritization process in developing its annual program for several years. This process is refined on a regular basis to reflect changing circumstances and conditions. Recently this process was changed to use project data contained in an existing enterprise database.
- **Life Cycle Cost Analysis:** Another economic decision-support tool that characterizes alternatives by patterns of cost likely to be incurred over a given period. It then seeks to assess these different patterns in comparable terms. The Federal Highway Administration encourages use of this method in analyzing all major investment decisions where such analyses are likely to increase efficiency and effectiveness of investment deci-

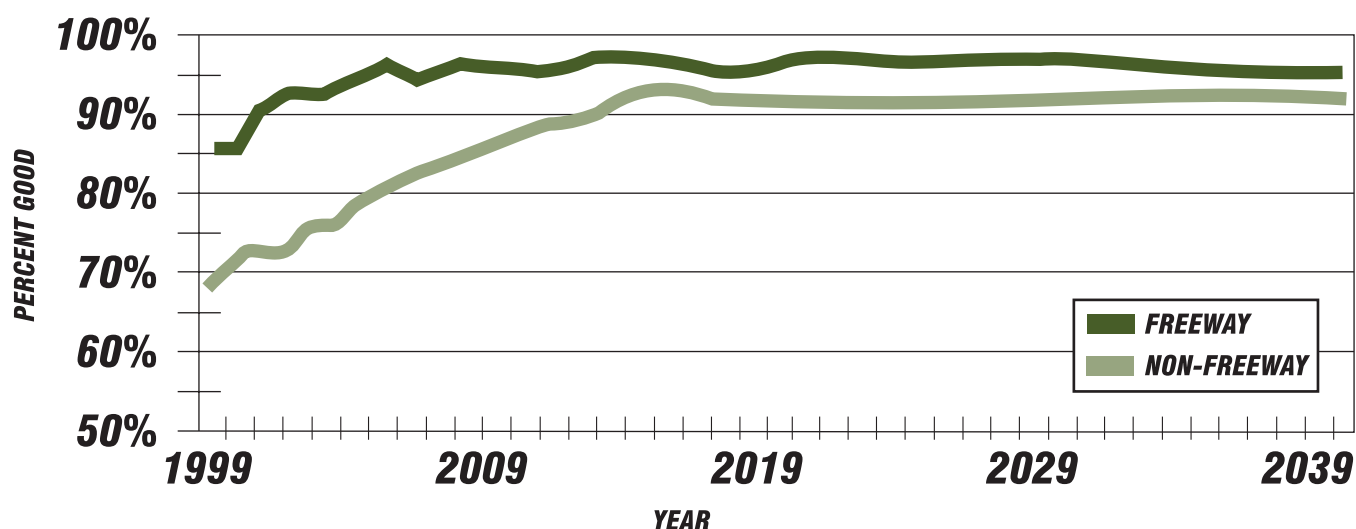
sions.¹⁷ In Michigan, Public Act 51 mandates this method for pavement-design projects costing more than \$1 million.⁶

- **Travel Demand Models:** MDOT uses two travel demand models, urban and statewide. The models assign present and projected traffic to a transportation network based on socioeconomic data and known travel patterns in the area. They provide the analytical framework to assess transportation system performance and identify and analyze capacity deficiencies. The models are also used to support development of urban and rural sub-state plans, the *State Long-Range Plan* and system-level project analysis. The travel demand models also provide data and the spatial analytical framework required for many of the management systems.

- **Pontis:** A bridge management tool that forecasts future bridge conditions, defines future needs and determines the optimum network strategy for managing the state's bridge network. Network bridge conditions for all bridge elements are known and future conditions are projected using a Markov chain model. The costs and effectiveness of each possible action are known. The optimum strategy for each is developed from the top down, and individual projects are recommended to conform with agency-specified business rules.

Projected results of MDOT's current road improvement strategy

ROAD QUALITY FORECAST - Freeway & Non-freeway



For Further Information -

please contact MDOT at 517-373-2240 or send e-mail to assetmgt@mdot.state.mi.us